IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): A pattern matching method for performing template matching on a waveform of a signal, a value of the signal varying according to at least a parameter, the pattern matching method comprising:

a first step of estimating an occurrence probability distribution of signal values at respective values of the parameter based on a plurality of measured signal waveforms;

a second step of generating a waveform template including an expected value of signal value at each value of the parameter and a probability template including a piece of occurrence probability information of the expected value at each value of the parameter based on the occurrence probability distribution; and

a third step of performing template matching between a newly measured signal waveform and the waveform template by using the piece of occurrence probability information of each of the expected values, which compose the probability template, as a piece of weight information at each value of the parameter.

Claim 2 (Original): The pattern matching method according to claim 1, wherein the occurrence probability distribution is a normal distribution.

Claim 3 (Original): The pattern matching method according to claim 1, wherein each of the expected values is an average value of signal values measured at each value of the parameter, and wherein each piece of the occurrence probability information is in accord with a probability density function value, for the respective expected value, of the occurrence probability distribution.

Claim 4 (Original): The pattern matching method according to claim 1, further comprising:

a fourth step in which a new waveform template including a new, expected value of a signal value at each value of the parameter and a new probability template including a piece of occurrence probability information of the new, expected value at each value of the parameter are generated based on the new signal waveform and the occurrence probability distribution; and

wherein the fourth step and the third step are repeated sequentially.

Claim 5 (Currently Amended): A pattern matching method of performing template matching between a waveform template, as a registered template, generated based on a plurality of measured signal waveforms and a subsequently measured signal waveform, comprising:

a first step of performing template matching between the registered template and a newly measured signal waveform; ~~and~~

a second step of ~~generating a new waveform template based on a plurality of waveforms~~ estimating an occurrence probability distribution of signal values at respective values of a parameter based on a plurality of waveforms including the signal waveform used for generating the registered template and the newly measured signal waveform, the parameter relating to changes of a waveform; and

a third step of generating, based on the occurrence probability distribution, a new template including a waveform template including expected values of the signal values at the respective values of the parameter and a probability template including a piece of occurrence probability information of the expected values, and replacing the registered template with the new template; and

wherein the first step, ~~and~~ the second step and the third step are repeated sequentially.

Claim 6 (Canceled).

Claim 7 (Currently Amended): The pattern matching method according to claim [[6]] 5, wherein the occurrence probability distribution is a normal distribution.

Claim 8 (Currently Amended): The pattern matching method according to claim [[6]] 5, wherein each of the expected values is an average value of signal values measured at each value of the parameter, and wherein each piece of the occurrence probability information is in accord with a probability density function value, for the respective expected value, of the occurrence probability distribution.

Claim 9 (Previously Presented): A pattern matching unit that performs template matching on a waveform of a signal, a value of the signal varying according to value change of at least a parameter, the pattern matching unit comprising:

a template generator which generates a waveform template including an expected value of a signal value at each value of the parameter and a probability template including a piece of occurrence probability information of the expected value at each value of the parameter based on the occurrence probability distribution of signal values for the respective values of the parameter, the distribution being estimated from a plurality of measured signal waveforms; and

a matching judgment unit which is electrically connected to the template generator and which performs template matching between a newly measured signal waveform and the waveform template by using pieces of occurrence probability information of the expected

values as pieces of weight information at respective values of the parameter, the pieces of occurrence probability information composing the probability template.

Claim 10 (Original): The pattern matching unit according to claim 9,

wherein the template generator generates a new waveform template and a new probability template based on the new signal waveform and the occurrence probability distribution.

Claim 11 (Currently Amended): A pattern matching unit that performs template matching, comprising:

a template generator which generates a waveform template based on a plurality of measured signal waveforms and registers the generated template as a registered template; ~~and~~

a matching judgment unit which is electrically connected to the template generator and which performs template matching between a newly measured signal waveform and the registered template; and

an estimating unit which estimates an occurrence probability distribution of signal values at respective values of a parameter based on a plurality of waveforms including the signal waveform used for generating the registered template and the newly measured signal waveform, the parameter relating to changes of a waveform,

wherein the template generator generates, based on the occurrence probability distribution, a new template including a waveform template including expected values of the signal values at the respective values of the parameter and a probability template including a piece of occurrence probability information of the expected values, ~~a new waveform template based on the plurality of signal waveforms used for generating the registered template and~~

~~the newly measured signal waveform~~ and replaces the registered template with the new template.

Claims 12-34 (Canceled).

Claim 35 (Currently Amended): A pattern matching method of performing template matching between a waveform template, as a registered template, generated based on a plurality of measured signal waveforms and a subsequently measured signal waveform, comprising:

a first step of performing template matching between the registered template and a newly measured signal waveform; ~~and~~

a second step of ~~generating a new waveform template based on a plurality of waveforms~~ estimating an occurrence probability distribution of signal values at respective values of a parameter based on a plurality of waveforms including the newly measured signal waveform and the registered template ~~and the newly measured signal waveform~~, the parameter relating to changes of a waveform; and

a third step of generating, based on the occurrence probability distribution, a new template including a waveform template including expected values of the signal values at the respective values of the parameter and a probability template including a piece of occurrence probability information of the expected values, and replacing the registered template with the new template, ~~; and~~

wherein the first step, ~~and~~ the second step and the third step are repeated sequentially.

Claim 36 (Currently Amended): A pattern matching unit that performs template matching, comprising:

a template generator which generates a waveform template based on a plurality of measured signal waveforms and registers the generated template as a registered template; ~~and~~

a matching judgment unit which is electrically connected to the template generator and which performs template matching between a newly measured signal waveform and the registered template; and

an estimating unit which estimates an occurrence probability distribution of signal values at respective values of a parameter based on a plurality of waveforms including the newly measured signal waveform and the registered template, the parameter relating to changes of a waveform,

wherein the template generator generates, based on the occurrence probability distribution, a new template including a waveform template including expected values of the signal values at the respective values of the parameter and a probability template including a piece of occurrence probability information of the expected values, ~~a new waveform template based on the registered template and the newly measured signal waveform~~ and replaces the registered template with the new template.